Sequence Listing

<110>   CHOE, Mu-Hyeon

<120>   THE DIMER OF CHIMERIC RECOMBINANT BINDING DOMAIN-FUNCTIONAL GROUP
         FUSION FORMED VIA DISULFIDE-BOND-BRIDGE AND THE PROCESSES FOR
         PRODUCING THE SAME

<130>   YL04011PCT

<140>   PCT/KR2004/001595
<141>   2004-06-30

<150>   KR2003-0043599
<151>   2003-06-30

<160>   12

<170>   KopatentIn 1.71

<210>   1
<211>   1749
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pMC74 plasmid coding sequence

<400>   1
atggatgtga agctggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa   60

ctctcctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag   120

actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgccgct   180

tattcagaca ctgtaaaggg ccggttcacc atctccagag acaatgccag gaacaccctc   240

tacctgcaaa tgagccgtct gaagtctgag gacacagcca tatattcctg tgcaagagga   300

ctggcctggg gagcctggtt tgcttactgg ggccaaggga ctctggtcac tgtctctgca   360

Sequence Listing

```
gccaaaacga caccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac          420

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc          480

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac          540

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc          600

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg          660

gattgtggta gtaagcctag cataagtaca aaagcttccg gaggtcccga gggcggcagc          720

ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc tggagacttt cacccgtcat          780

cgccagccgc gcggctggga caactggag cagtgcggct atccggtgca gcggctggtc          840

gccctctacc tggcggcgcg gctgtcgtgg aaccaggtcg accaggtgat ccgcaacgcc          900

ctggccagcc ccggcagcgg cggcgacctg ggcgaagcga tccgcgagca gccggagcag          960

gcccgtctgg ccctgaccct ggccgccgcc gagagcgagc gcttcgtccg gcagggcacc          1020

ggcaacgacg aggccggcgc ggccaacggc ccggcggaca cggcgacgc cctgctggag          1080

cgcaactatc ccactggcgc ggagttcctc ggcgacggcg gcgacgtcag cttcagcacc          1140

cgcggcacgc agaactggac ggtggagcgg ctgctccagg cgcaccgcca actggaggag          1200

cgcggctatg tgttcgtcgg ctaccacggc accttcctcg aagcggcgca aagcatcgtc          1260

ttcggcgggg tgcgcgcgcg cagccaggac ctcgacgcga tctggcgcgg tttctatatc          1320

gccggcgatc cggcgctggc ctacggctac gcccaggacc aggaacccga cgcacgcggc          1380

cggatccgca acggtgccct gctgcgggtc tatgtgccgc gctcgagcct gccgggcttc          1440

taccgcacca gcctgaccct ggccgcgccg gaggcggcgg gcgaggtcga acggctgatc          1500

ggccatccgc tgccgctgcg cctggacgcc atcaccggcc ccgaggagga aggcgggcgc          1560
```

Sequence Listing

```
ctggagacca ttctcggctg ccgctggcc gagcgcaccg tggtgattcc ctcggcgatc        1620

cccaccgacc cgcgcaacgt cggcggcgac ctcgacccgt ccagcatccc cgacaaggaa        1680

caggcgatca gcgccctgcc ggactacgcc agccagcccg gcaaaccgcc gcgcgaggac        1740

ctgaagtaa                                                                1749
```

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<210>    2
<211>    1764
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    pMH21 plasmid coding sequence


<400>    2
atggaggtga agctggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa        60

ctctcctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag        120

actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgccgct        180

tattcagaca ctgtaaaggg ccggttcacc atctccagag acaatgccag gaacaccctc        240

tacctgcaaa tgagccgtct gaagtctgag gacacagcca tatattcctg tgcaagagga        300

ctggcctggg gagcctggtt tgcttactgg ggccaaggga ctctggtcac tgtctctgca        360

gccaaaacga cacccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac        420

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc        480

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac        540

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc        600

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg        660
```

Sequence Listing

```
gattgtggta gtaagccttg cataagtaca aaagcttctg gtggtggcgg atctggaggt          720

cccgagggcg gcagcctggc cgcgctgacc gcgcaccagg cttgccacct gccgctggag          780

actttcaccc gtcatcgcca gccgcgcggc tgggaacaac tggagcagtg cggctatccg          840

gtgcagcggc tggtcgccct ctacctggcg gcgcggctgt cgtggaacca ggtcgaccag          900

gtgatccgca acgccctggc cagccccggc agcggcggcg acctgggcga agcgatccgc          960

gagcagccgg agcaggcccg tctggccctg accctggccg ccgccgagag cgagcgcttc         1020

gtccggcagg gcaccggcaa cgacgaggcc ggcgcggcca acggcccggc ggacagcggc         1080

gacgccctgc tggagcgcaa ctatcccact ggcgcggagt tcctcggcga cggcggcgac         1140

gtcagcttca gcacccgcgg cacgcagaac tggacggtgg agcggctgct ccaggcgcac         1200

cgccaactgg aggagcgcgg ctatgtgttc gtcggctacc acggcacctt cctcgaagcg         1260

gcgcaaagca tcgtcttcgg cggggtgcgc gcgcgcagcc aggacctcga cgcgatctgg         1320

cgcggtttct atatcgccgg cgatccggcg ctggcctacg gctacgccca ggaccaggaa         1380

cccgacgcac gcggccggat ccgcaacggt gccctgctgc gggtctatgt gccgcgctcg         1440

agcctgccgg gcttctaccg caccagcctg accctggccg cgccggaggc ggcgggcgag         1500

gtcgaacggc tgatcggcca tccgctgccg ctgcgcctgg acgccatcac cggccccgag         1560

gaggaaggcg ggcgcctgga gaccattctc ggctggccgc tggccgagcg caccgtggtg         1620

attccctcgg cgatccccac cgacccgcgc aacgtcggcg gcgacctcga cccgtccagc         1680

atccccgaca aggaacaggc gatcagcgcc ctgccggact acgccagcca gcccggcaaa         1740

ccgccgcgcg aggacctgaa gtaa                                                1764
```

Sequence Listing

<210>   3
<211>   1749
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pCE2 plasmid coding sequence

<400>   3
atggatgtga agctggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa   60

ctctcctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag   120

actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgccgct   180

tattcagaca ctgtaaaggg ccggttcacc atctccagag acaatgccag gaacaccctc   240

tacctgcaaa tgagccgtct gaagtctgag gacacagcca tatattcctg tgcaagagga   300

ctggcctggg gagcctggtt tgcttactgg ggccaaggga ctctggtcac tgtctctgca   360

gccaaaacga caccccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac   420

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc   480

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac   540

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc   600

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg   660

gattgtggta gtaagccttg cataagtaca aaagcttccg gaggtcccga gggcggcagc   720

ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc tggagacttt cacccgtcat   780

cgccagccgc gcggctggga caactggag cagtgcggct atccggtgca gcggctggtc   840

gccctctacc tggcggcgcg gctgtcgtgg aaccaggtcg accaggtgat ccgcaacgcc   900

Sequence Listing

```
ctggccagcc ccggcagcgg cggcgacctg ggcgaagcga tccgcgagca gccggagcag        960

gcccgtctgg ccctgaccct ggccgccgcc gagagcgagc gcttcgtccg gcagggcacc       1020

ggcaacgacg aggccggcgc ggccaacggc ccggcggaca gcggcgacgc cctgctggag       1080

cgcaactatc ccactggcgc ggagttcctc ggcgacggcg gcgacgtcag cttcagcacc       1140

cgcggcacgc agaactggac ggtggagcgg ctgctccagg cgcaccgcca actggaggag       1200

cgcggctatg tgttcgtcgg ctaccacggc accttcctcg aagcggcgca aagcatcgtc       1260

ttcggcgggg tgcgcgcgcg cagccaggac ctcgacgcga tctggcgcgg tttctatatc       1320

gccggcgatc cggcgctggc ctacggctac gcccaggacc aggaacccga cgcacgcggc       1380

cggatccgca acggtgccct gctgcgggtc tatgtgccgc gctcgagcct gccgggcttc       1440

taccgcacca gcctgaccct ggccgcgccg gaggcggcgg gcgaggtcga acggctgatc       1500

ggccatccgc tgccgctgcg cctggacgcc atcaccggcc ccgaggagga aggcgggcgc       1560

ctggagacca ttctcggctg gccgctggcc gagcgcaccg tggtgattcc ctcggcgatc       1620

cccaccgacc cgcgcaacgt cggcggcgac ctcgacccgt ccagcatccc cgacaaggaa       1680

caggcgatca gcgccctgcc ggactacgcc agccagcccg gcaaaccgcc gcgcgaggac       1740

ctgaagtaa                                                                1749
```

```
<210>    4
<211>    672
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    pMC75 plasmid coding sequence
```

Sequence Listing

<400>   4

atggatgtgc tgatgaccca gtctccattg agtttacctg tcagtcttgg agatcaagcc   60

tccatctctt gcagatctag tcagatcatt gtacatagta atggaaacac ctatttagaa   120

tggtacctgc agaaaccagg ccagtctcca agctcctga tctacaaagt ttccaaccga   180

ttttctgggg tcccagacag gttcagtggc agtggatcag gacagatt cacactcaag   240

atcagcagag tggaggctga ggatctggga gtttattact gctttcaagg ttcacatgtt   300

ccattcacgt tcggctcggg gacaaagttg gaaataaaac gggctgatgc tgcaccaact   360

gtatccatct tcccaccatc cagtgagcag ttaacatctg aggtgcctc agtcgtgtgc   420

ttcttgaaca acttctaccc caaagacatc aatgtcaagt ggaagattga tggcagtgaa   480

cgacaaaatg gcgtcctgaa cagttggact gatcaggaca gcaaagacag cacctacagc   540

atgagcagca ccctcacgtt gaccaaggac gagtatgaac gacataacag ctatacctgt   600

gaggccactc acaagacatc aacttcaccc attgtcaaga gcttcaacag gaatgagtgt   660

ggtaaagctt aa   672

<210>   5
<211>   2454
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pLSC52 plasmid coding sequence

<400>   5

atggatgtga agctggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa   60

ctctcctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag   120

Sequence Listing

```
actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgccgct       180

tattcagaca ctgtaaaggg ccggttcacc atctccagag acaatgccag gaacaccctc       240

tacctgcaaa tgagccgtct gaagtctgag gacacagcca tatattcctg tgcaagagga       300

ctggcctggg gagcctggtt tgcttactgg ggccaaggga ctctggtcac tgtctctgca       360

gccaaaacga cacccccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac       420

tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc       480

tggaactctg gatccctgtc cagcggtgtg cacaccttcc cagctgtcct gcagtctgac       540

ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag cgagaccgtc       600

acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg       660

gattgtggtg agcccaaatc ttgtgacaaa actcacacat gcccaccgtg cccagcacct       720

gaactcctgg gggaccgtc agtcttcctc ttccccccaa aacccaagga caccctcatg       780

atctcccgga cccctgaggt cacatgcgtg gtggtggacg tgagccacga agaccctgag       840

gtcaagttca ctggtacgt ggacggcgtg gaggtgcata atgccaagac aaagccgcgg       900

gaggagcagt acaacagcac gtaccgtgtg gtcagcgtcc tcaccgtcct gcaccaggac       960

tggctgaatg gcaaggagta caagtgcaag gtctccaaca aagccctccc agcccccatc      1020

gagaaaacca tctccaaagc caaagggcag ccccgagaac acaggtgta caccctgccc      1080

ccatcccggg atgagctgac caagaaccag gtcagcctga cctgcctggt caaaggcttc      1140

tatcccagcg acatcgccgt ggagtgggag agcaatgggc agccggagaa caactacaag      1200

accacgcctc ccgtgctgga ctccgacggc tccttcttcc tctacagcaa gctcaccgtg      1260

gacaagagca ggtggcagca ggggaacgtc ttctcatgct ccgtgatgca tgaggctctg      1320
```

Sequence Listing

```
cacaaccact acacgcagaa gagcctctcc ctgtctccgg gtaaaggcgg aggcggatcc       1380

ggtggtggcg gttctaaagc ttccggaggt cccgagggcg gcagcctggc cgcgctgacc       1440

gcgcaccagg cttgccacct gccgctggag actttcaccc gtcatcgcca gccgcgcggc       1500

tgggaacaac tggagcagtg cggctatccg gtgcagcggc tggtcgccct ctacctggcg       1560

gcgcggctgt cgtggaacca ggtcgaccag gtgatccgca acgccctggc cagccccggc       1620

agcggcggcg acctgggcga agcgatccgc gagcagccgg agcaggcccg tctggccctg       1680

accctggccg ccgccgagag cgagcgcttc gtccggcagg gcaccggcaa cgacgaggcc       1740

ggcgcggcca acggcccggc ggacagcggc gacgccctgc tggagcgcaa ctatcccact       1800

ggcgcggagt tcctcggcga cggcggcgac gtcagcttca gcacccgcgg cacgcagaac       1860

tggacggtgg agcggctgct ccaggcgcac cgccaactgg aggagcgcgg ctatgtgttc       1920

gtcggctacc acggcacctt cctcgaagcg gcgcaaagca tcgtcttcgg cggggtgcgc       1980

gcgcgcagcc aggacctcga cgcgatctgg cgcggtttct atatcgccgg cgatccggcg       2040

ctggcctacg gctacgccca ggaccaggaa cccgacgcac gcggccggat ccgcaacggt       2100

gccctgctgc gggtctatgt gccgcgctcg agcctgccgg gcttctaccg caccagcctg       2160

accctggccg cgccggaggc ggcgggcgag gtcgaacggc tgatcggcca tccgctgccg       2220

ctgcgcctgg acgccatcac cggcccgag  gaggaaggcg ggcgcctgga gaccattctc      2280

ggctggccgc tggccgagcg caccgtggtg attccctcgg cgatccccac cgacccgcgc       2340

aacgtcggcg gcgacctcga cccgtccagc atccccgaca aggaacaggc gatcagcgcc       2400

ctgccggact acgccagcca gcccggcaaa ccgccgcgcg aggacctgaa gtaa             2454
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<210>   6

Sequence Listing

<211> 1233

<212> DNA

<213> Artificial Sequence

<220>

<223> pKL4 plasmid coding sequence

<400> 6

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atgcatcacc atcaccatca cgatgtgaag ctggtggaat ctggaggagg cttagtgcag      60

cctggagggt ccctgaaact ctcctgtgca acctctggat tcactttcag tgactattac     120

atgtattggg ttcgccagac tccagagaag aggctggagt gggtcgcata cattagtaat     180

gatgatagtt ccgccgctta ttcagacact gtaaagggcc ggttcaccat ctccagagac     240

aatgccagga acaccctcta cctgcaaatg agccgtctga agtctgagga cacagccata     300

tattcctgtg caagaggact ggcctgggga gcctggtttg cttactgggg ccaagggact     360

ctggtcactg tctctgcagc caaaacgaca cccccatctg tctatccact ggcccctgga     420

tctgctgccc aaactaactc catggtgacc ctgggatgcc tggtcaaggg ctatttccct     480

gagccagtga cagtgacctg gaactctgga tccctgtcca gcggtgtgca caccttccca     540

gctgtcctgc agtctgacct ctacactctg agcagctcag tgactgtccc ctccagcacc     600

tggcccagcg agaccgtcac ctgcaacgtt gcccacccgg ccagcagcac caaggtggac     660

aagaaaattg tgcccaggga ttgtggtgct aagccttgca tagctacaca agcttccggt     720

ggtggcggat ctggaggtgg cggaagcgga ggtcccgagg tgacaggggg aatggcaagc     780

aagtgggatc agaagggtat ggacattgcc tatgaggagg cggccttagg ttacaaagag     840

ggtggtgttc ctattggcgg atgtcttatc aataacaaag acggaagtgt tctcggtcgt     900

ggtcacaaca tgagatttca aaagggatcc gccacactac atggtgagat ctccactttg     960
```

Sequence Listing

gaaaactgtg ggagattaga gggcaaagtg tacaaagata ccactttgta tacgacgctg   1020

tctccatgcg acatgtgtac aggtgccatc atcatgtatg gtattccacg ctgtgttgtc   1080

ggtgagaacg ttaatttcaa aagtaagggc gagaaatatt tacaaactag aggtcacgag   1140

gttgttgttg ttgacgatga gaggtgtaaa aagatcatga acaatttat cgatgaaaga   1200

cctcaggatt ggtttgaaga tattggtgag tag   1233

<210>   7
<211>   4871
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pMC74 plasmid full sequence

<400>   7
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac   60

tttaagaagg agatatacat atggatgtga agctggtgga atctggagga ggcttagtgc   120

agcctggagg gtccctgaaa ctctcctgtg caacctctgg attcactttc agtgactatt   180

acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta   240

atgatgatag ttccgccgct tattcagaca ctgtaaaggg ccggttcacc atctccagag   300

acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca   360

tatattcctg tgcaagagga ctggcctggg gagcctggtt tgcttactgg ggccaaggga   420

ctctggtcac tgtctctgca gccaaaacga caccccatc tgtctatcca ctggccctg   480

gatctgctgc ccaaactaac tccatggtga ccctgggatg cctggtcaag ggctatttcc   540

Sequence Listing

```
ctgagccagt gacagtgacc tggaactctg gatccctgtc cagcggtgtg cacaccttcc          600

cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc ccctccagca          660

cctggcccag cgagaccgtc acctgcaacg ttgcccaccc ggccagcagc accaaggtgg          720

acaagaaaat tgtgcccagg gattgtggta gtaagcctag cataagtaca aaagcttccg          780

gaggtcccga gggcggcagc ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc          840

tggagacttt cacccgtcat cgccagccgc gcggctggga acaactggag cagtgcggct          900

atccggtgca gcggctggtc gccctctacc tggcggcgcg gctgtcgtgg aaccaggtcg          960

accaggtgat ccgcaacgcc ctggccagcc ccggcagcgg cggcgacctg ggcgaagcga         1020

tccgcgagca gccggagcag gcccgtctgg ccctgaccct ggccgccgcc gagagcgagc         1080

gcttcgtccg gcagggcacc ggcaacgacg aggccggcgc ggccaacggc ccggcggaca         1140

gcggcgacgc cctgctggag cgcaactatc ccactggcgc ggagttcctc ggcgacggcg         1200

gcgacgtcag cttcagcacc cgcggcacgc agaactggac ggtggagcgg ctgctccagg         1260

cgcaccgcca actggaggag cgcggctatg tgttcgtcgg ctaccacggc accttcctcg         1320

aagcggcgca aagcatcgtc ttcggcgggg tgcgcgcgcg cagccaggac ctcgacgcga         1380

tctggcgcgg tttctatatc gccggcgatc cggcgctggc ctacggctac gcccaggacc         1440

aggaacccga cgcacgcggc cggatccgca acggtgccct gctgcgggtc tatgtgccgc         1500

gctcgagcct gccgggcttc taccgcacca gcctgaccct ggccgcgccg gaggcggcgg         1560

gcgaggtcga acggctgatc ggccatccgc tgccgctgcg cctggacgcc atcaccggcc         1620

ccgaggagga aggcgggcgc ctggagacca ttctcggctg gccgctggcc gagcgcaccg         1680

tggtgattcc ctcggcgatc cccaccgacc cgcgcaacgt cggcggcgac ctcgaccgt         1740
```

Sequence Listing

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ccagcatccc cgacaaggaa caggcgatca gcgccctgcc ggactacgcc agccagcccg      1800

gcaaaccgcc gcgcgaggac ctgaagtaac tgccgcgacc ggccggctcc cttcgcagga      1860

gccggccttc tcggggcctg gccatacatc aggttttcct gatgccagcc caatcgaata      1920

tgaattcggc tgctaacaaa gcccgaaagg aagctgagtt ggctgctgcc accgctgagc      1980

aataactagc ataacccctt gggcctctaa acgggtcttg aggggttttt tgctgaaagg      2040

aggaactata tccggatcgg agatcaattc tggcgtaata gcgaagaggc ccgcaccgat      2100

cgcccttccc aacagttgcg tagcctgaat ggcgaatggg acgcgccctg tagcggcgca      2160

ttaagcgcgg cgggtgtggt ggttacgcgc agcgtgaccg ctacacttgc cagcgcccta      2220

gcgcccgctc ctttcgcttt cttcccttcc tttctcgcca cgttcgccgg ctttccccgt      2280

caagctctaa atcggggggct cccttttaggg ttccgatttta gtgctttacg gcacctcgac      2340

cccaaaaaac ttgattaggg tgatggttca cgtagtgggc catcgccctg atagacggtt      2400

tttcgccctt tgacgttgga gtccacgttc tttaatagtg gactcttgtt ccaaactgga      2460

acaacactca accctatctc ggtctattct tttgatttat aagggatttt gccgatttcg      2520

gcctattggt taaaaaatga gctgatttaa caaaaattta acgcgaattt taacaaaata      2580

ttaacgttta caatttcagg tggcactttt cggggaaatg tgcgcggaac ccctatttgt      2640

ttatttttct aaatacattc aaatatgtat ccgctcatga dacaataacc ctgataaatg      2700

cttcaataat attgaaaaag gaagagtatg agtattcaac atttccgtgt cgcccttatt      2760

ccctttttttg cggcattttg ccttcctgtt tttgctcacc cagaaacgct ggtgaaagta      2820

aaagatgctg aagatcagtt gggtgcacga gtgggttaca tcgaactgga tctcaacagc      2880

ggtaagatcc ttgagagttt tcgccccgaa gaacgttttc caatgatgag cactttttaaa      2940
```

Sequence Listing

```
gttctgctat  gtggcgcggt  attatcccgt  attgacgccg  ggcaagagca  actcggtcgc        3000

cgcatacact  attctcagaa  tgacttggtt  gagtactcac  cagtcacaga  aaagcatctt        3060

acggatggca  tgacagtaag  agaattatgc  agtgctgcca  taagcatgag  tgataacact        3120

gcggccaact  tacttctgac  aacgatcgga  ggaccgaagg  agctaaccgc  ttttttttcac       3180

aacatggggg  atcatgtaac  tcgccttgat  cgttgggaac  cggagctgaa  tgaagccata        3240

ccaaacgacg  agcgtgacac  cacgatgcct  gtagcaatgg  caacaacgtt  gcgcaaacta        3300

ttaactggcg  aactacttac  tctagcttcc  cggcaacaat  taatagactg  gatggaggcg        3360

gataaagttg  caggaccact  tctgcgctcg  gcccttccgg  ctggctggtt  tattgctgat        3420

aaatctggag  ccggtgagcg  tgggtctcgc  ggtatcattg  cagcactggg  gccagatggt        3480

aagccctccc  gtatcgtagt  tatctacacg  acgggcagtc  aggcaactat  ggatgaacga        3540

aatagacaga  tcgctgagat  aggtgcctca  ctgattaagc  attggtaact  gtcagaccaa        3600

gtttactcat  atatacttta  gattgattta  aaacttcatt  tttaatttaa  aaggatctag        3660

gtgaagatcc  tttttgataa  tctcatgacc  aaaatccctt  aacgtgagtt  ttcgttccac        3720

tgagcgtcag  accccgtaga  aaagatcaaa  ggatcttctt  gagatccttt  ttttctgcgc        3780

gtaatctgct  gcttgcaaac  aaaaaaacca  ccgctaccag  cggtggtttg  tttgccggat        3840

caagagctac  caactctttt  tccgaaggta  actggcttca  gcagagcgca  gataccaaat        3900

actgtccttc  tagtgtagcc  gtagttaggc  caccacttca  agaactctgt  agcaccgcct        3960

acatacctcg  ctctgctaat  cctgttacca  gtggctgctg  ccagtggcga  taagtcgtgt        4020

cttaccgggt  tggactcaag  acgatagtta  ccggataagg  cgcagcggtc  gggctgaacg        4080

gggggttcgt  gcacacagcc  cagcttggag  cgaacgacct  acaccgaact  gagataccta        4140
```

Sequence Listing

```
cagcgtgagc attgagaaag cgccacgctt cccgaaggga gaaaggcgga caggtatccg        4200

gtaagcggca gggtcggaac aggagagcgc acgagggagc ttccaggggg gaacgcctgg        4260

tatctttata gtcctgtcgg gtttcgccac ctctgacttg agcgtcgatt tttgtgatgc        4320

tcgtcagggg ggccgagcct atggaaaaac gccagcaacg cggccttttt acggttcctg        4380

gccttttgct ggccttttgc tcacatgttc tttcctgcgt tatcccctga ttctgtggat        4440

aaccgtatta ccgcctttga gtgagctgat accgctcgcc gcagccgaac gaccgagcgc        4500

agcgagtcag tgagcgagga agcggaagag cgcctgatgc ggtattttct ccttacgcat        4560

ctgtgcggta tttcacaccg catatatggt gcactctcag tacaatctgc tctgatgccg        4620

catagttaag ccagtataca ctccgctatc gctacgtgac tgcaaggaga tggcgcccaa        4680

cagtcccccg gccacggggc ctgccaccat acccacgccg aaacaagcgc tcatgagccc        4740

gaagtggcga gcccgatctt ccccatcggt gatgtcggcg atataggcgc cagcaaccgc        4800

acctgtggcg ccggtgatgc cggccacgat gcgtccggcg tagaggatct tgagatctcg        4860

atccgcgaaa t                                                            4871
```

<210>   8
<211>   4886
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pMH21 plasmid full sequence

<400>   8
```
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac         60

tttaagaagg agatatacat atggaggtga agctggtgga atctggagga ggcttagtgc        120
```

Sequence Listing

```
agcctggagg gtccctgaaa ctctcctgtg caacctctgg attcactttc agtgactatt          180

acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta          240

atgatgatag ttccgccgct tattcagaca ctgtaaaggg ccggttcacc atctccagag          300

acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca          360

tatattcctg tgcaagagga ctggcctggg gagcctggtt tgcttactgg ggccaaggga          420

ctctggtcac tgtctctgca gccaaaacga cacccccatc tgtctatcca ctggcccctg          480

gatctgctgc ccaaactaac tccatggtga ccctgggatg cctggtcaag ggctatttcc          540

ctgagccagt gacagtgacc tggaactctg gatccctgtc cagcggtgtg cacaccttcc          600

cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc ccctccagca          660

cctggcccag cgagaccgtc acctgcaacg ttgcccaccc ggccagcagc accaaggtgg          720

acaagaaaat tgtgcccagg gattgtggta gtaagccttg cataagtaca aaagcttctg          780

gtggtggcgg atctggaggt cccgagggcg gcagcctggc cgcgctgacc gcgcaccagg          840

cttgccacct gccgctggag actttcaccc gtcatcgcca gccgcgcggc tgggaacaac          900

tggagcagtg cggctatccg gtgcagcggc tggtcgccct ctacctggcg cgcggctgt           960

cgtggaacca ggtcgaccag gtgatccgca cgccctggc cagccccggc agcggcggcg          1020

acctgggcga agcgatccgc gagcagccgg agcaggcccg tctggccctg accctggccg         1080

ccgccgagag cgagcgcttc gtccggcagg gcaccggcaa cgacgaggcc ggcgcggcca        1140

acggcccggc ggacagcggc gacgccctgc tggagcgcaa ctatcccact ggcgcggagt        1200

tcctcggcga cggcggcgac gtcagcttca gcacccgcgg cacgcagaac tggacggtgg        1260

agcggctgct ccaggcgcac cgccaactgg aggagcgcgg ctatgtgttc gtcggctacc        1320
```

Sequence Listing

```
acggcacctt cctcgaagcg gcgcaaagca tcgtcttcgg cggggtgcgc gcgcgcagcc        1380

aggacctcga cgcgatctgg cgcggtttct atatcgccgg cgatccggcg ctggcctacg        1440

gctacgccca ggaccaggaa cccgacgcac gcggccggat ccgcaacggt gccctgctgc        1500

gggtctatgt gccgcgctcg agcctgccgg gcttctaccg caccagcctg accctggccg        1560

cgccggaggc ggcgggcgag gtcgaacggc tgatcggcca tccgctgccg ctgcgcctgg        1620

acgccatcac cggccccgag gaggaaggcg ggcgcctgga gaccattctc ggctggccgc        1680

tggccgagcg caccgtggtg attccctcgg cgatccccac cgacccgcgc aacgtcggcg        1740

gcgacctcga cccgtccagc atccccgaca aggaacaggc gatcagcgcc ctgccggact        1800

acgccagcca gcccggcaaa ccgccgcgcg aggacctgaa gtaactgccg cgaccggccg        1860

gctcccttcg caggagccgg ccttctcggg gcctggccat acatcaggtt ttcctgatgc        1920

cagcccaatc gaatatgaat tcggctgcta acaaagcccg aaaggaagct gagttggctg        1980

ctgccaccgc tgagcaataa ctagcataac cccttgggcc tctaaacggg tcttgagggg        2040

ttttttgctg aaaggaggaa ctatatccgg atcggagatc aattctggcg taatagcgaa        2100

gaggcccgca ccgatcgccc ttcccaacag ttgcgtagcc tgaatggcga tgggacgcg         2160

ccctgtagcg gcgcattaag cgcggcgggt gtggtggtta cgcgcagcgt gaccgctaca        2220

cttgccagcg ccctagcgcc cgctcctttc gctttcttcc cttcctttct cgccacgttc        2280

gccggctttc cccgtcaagc tctaaatcgg gggctccctt tagggttccg atttagtgct        2340

ttacggcacc tcgaccccaa aaaacttgat tagggtgatg gttcacgtag tgggccatcg        2400

ccctgataga cggttttttcg ccctttgacg ttggagtcca cgttctttaa tagtggactc        2460

ttgttccaaa ctggaacaac actcaaccct atctcggtct attcttttga tttataaggg        2520
```

Sequence Listing

```
attttgccga tttcggccta ttggttaaaa aatgagctga tttaacaaaa atttaacgcg        2580

aattttaaca aaatattaac gtttacaatt tcaggtggca cttttcgggg aaatgtgcgc        2640

ggaacccta tttgtttatt tttctaaata cattcaaata tgtatccgct catgagacaa         2700

taaccctgat aaatgcttca ataatattga aaaaggaaga gtatgagtat tcaacatttc        2760

cgtgtcgccc ttattccctt ttttgcggca ttttgccttc ctgtttttgc tcacccagaa        2820

acgctggtga aagtaaaaga tgctgaagat cagttgggtg cacgagtggg ttacatcgaa        2880

ctggatctca acagcggtaa gatccttgag agttttcgcc ccgaagaacg ttttccaatg        2940

atgagcactt ttaaagttct gctatgtggc gcggtattat cccgtattga cgccgggcaa        3000

gagcaactcg gtcgccgcat acactattct cagaatgact tggttgagta ctcaccagtc        3060

acagaaaagc atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataagc        3120

atgagtgata acactgcggc caacttactt ctgacaacga tcggaggacc gaaggagcta        3180

accgcttttt ttcacaacat gggggatcat gtaactcgcc ttgatcgttg ggaaccggag        3240

ctgaatgaag ccataccaaa cgacgagcgt gacaccacga tgcctgtagc aatggcaaca        3300

acgttgcgca aactattaac tggcgaacta cttactctag cttcccggca acaattaata        3360

gactggatgg aggcggataa agttgcagga ccacttctgc gctcggccct tccggctggc        3420

tggtttattg ctgataaatc tggagccggt gagcgtgggt ctcgcggtat cattgcagca        3480

ctggggccag atggtaagcc ctcccgtatc gtagttatct acacgacggg cagtcaggca        3540

actatggatg aacgaaatag acagatcgct gagataggtg cctcactgat taagcattgg        3600

taactgtcag accaagttta ctcatatata ctttagattg atttaaaact tcatttttaa        3660

tttaaaagga tctaggtgaa gatccttttt gataatctca tgaccaaaat cccttaacgt       3720
```

Sequence Listing

```
gagttttcgt tccactgagc gtcagacccc gtagaaaaga tcaaaggatc ttcttgagat     3780

cctttttttc tgcgcgtaat ctgctgcttg caaacaaaaa aaccaccgct accagcggtg     3840

gtttgtttgc cggatcaaga gctaccaact ctttttccga aggtaactgg cttcagcaga     3900

gcgcagatac caaatactgt ccttctagtg tagccgtagt taggccacca cttcaagaac     3960

tctgtagcac cgcctacata cctcgctctg ctaatcctgt taccagtggc tgctgccagt     4020

ggcgataagt cgtgtcttac cgggttggac tcaagacgat agttaccgga taaggcgcag     4080

cggtcgggct gaacggggggg ttcgtgcaca cagcccagct tggagcgaac gacctacacc    4140

gaactgagat acctacagcg tgagcattga gaaagcgcca cgcttcccga agggagaaag     4200

gcggacaggt atccggtaag cggcagggtc ggaacaggag agcgcacgag ggagcttcca     4260

ggggggaacg cctggtatct ttatagtcct gtcgggtttc gccacctctg acttgagcgt     4320

cgatttttgt gatgctcgtc aggggggccg agcctatgga aaaacgccag caacgcggcc     4380

tttttacggt tcctggcctt ttgctggcct tttgctcaca tgttctttcc tgcgttatcc     4440

cctgattctg tggataaccg tattaccgcc tttgagtgag ctgataccgc tcgccgcagc     4500

cgaacgaccg agcgcagcga gtcagtgagc gaggaagcgg aagagcgcct gatgcggtat     4560

tttctcctta cgcatctgtg cggtatttca caccgcatat atggtgcact ctcagtacaa     4620

tctgctctga tgccgcatag ttaagccagt atacactccg ctatcgctac gtgactgcaa     4680

ggagatggcg cccaacagtc ccccggccac ggggcctgcc accataccca cgccgaaaca     4740

agcgctcatg agcccgaagt ggcgagcccg atcttcccca tcggtgatgt cggcgatata     4800

ggcgccagca accgcacctg tggcgccggt gatgccggcc acgatgcgtc cggcgtagag     4860

gatcttgaga tctcgatccg cgaaat                                          4886
```

Sequence Listing

<210>   9
<211>   4871
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pCE2 plasmid full sequence

<400>   9
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac   60

tttaagaagg agatatacat atggatgtga agctggtgga atctggagga ggcttagtgc   120

agcctggagg gtccctgaaa ctctcctgtg caacctctgg attcactttc agtgactatt   180

acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta   240

atgatgatag ttccgccgct tattcagaca ctgtaaaggg ccggttcacc atctccagag   300

acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca   360

tatattcctg tgcaagagga ctggcctggg gagcctggtt tgcttactgg ggccaaggga   420

ctctggtcac tgtctctgca gccaaaacga cacccccatc tgtctatcca ctggcccctg   480

gatctgctgc ccaaactaac tccatggtga ccctgggatg cctggtcaag ggctatttcc   540

ctgagccagt gacagtgacc tggaactctg gatccctgtc cagcggtgtg cacaccttcc   600

cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc ccctccagca   660

cctggcccag cgagaccgtc acctgcaacg ttgcccaccc ggccagcagc accaaggtgg   720

acaagaaaat tgtgcccagg gattgtggta gtaagccttg cataagtaca aaagcttccg   780

gaggtcccga gggcggcagc ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc   840

                                    – 20 –

Sequence Listing

```
tggagacttt cacccgtcat cgccagccgc gcggctggga acaactggag cagtgcggct    900

atccggtgca gcggctggtc gccctctacc tggcggcgcg gctgtcgtgg aaccaggtcg    960

accaggtgat ccgcaacgcc ctggccagcc ccggcagcgg cggcgacctg ggcgaagcga    1020

tccgcgagca gccggagcag gcccgtctgg ccctgaccct ggccgccgcc gagagcgagc    1080

gcttcgtccg gcagggcacc ggcaacgacg aggccggcgc ggccaacggc ccggcggaca    1140

gcggcgacgc cctgctggag cgcaactatc ccactggcgc ggagttcctc ggcgacggcg    1200

gcgacgtcag cttcagcacc cgcggcacgc agadctggac ggtggagcgg ctgctccagg    1260

cgcaccgcca actggaggag cgcggctatg tgttcgtcgg ctaccacggc accttcctcg    1320

aagcggcgca aagcatcgtc ttcggcgggg tgcgcgcgcg cagccaggac ctcgacgcga    1380

tctggcgcgg tttctatatc gccggcgatc cggcgctggc ctacggctac gcccaggacc    1440

aggaacccga cgcacgcggc cggatccgca acggtgccct gctgcgggtc tatgtgccgc    1500

gctcgagcct gccgggcttc taccgcacca gcctgaccct ggccgcgccg gaggcggcgg    1560

gcgaggtcga acggctgatc ggccatccgc tgccgctgcg cctggacgcc atcaccggcc    1620

ccgaggagga aggcgggcgc ctggagacca ttctcggctg gccgctggcc gagcgcaccg    1680

tggtgattcc ctcggcgatc cccaccgacc cgcgcaacgt cggcggcgac ctcgacccgt    1740

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gcaaaccgcc gcgcgaggac ctgaagtaac tgccgcgacc ggccggctcc cttcgcagga    1860

gccggccttc tcggggcctg gccatacatc aggttttcct gatgccagcc caatcgaata    1920

tgaattcggc tgctaacaaa gcccgaaagg aagctgagtt ggctgctgcc accgctgagc    1980

aataactagc ataacccctt gggcctctaa acgggtcttg aggggttttt tgctgaaagg    2040
```

Sequence Listing

```
aggaactata tccggatcgg agatcaattc tggcgtaata gcgaagaggc ccgcaccgat        2100

cgcccttccc aacagttgcg tagcctgaat ggcgaatggg acgcgccctg tagcggcgca        2160

ttaagcgcgg cgggtgtggt ggttacgcgc agcgtgaccg ctacacttgc cagcgcccta        2220

gcgcccgctc ctttcgcttt cttcccttcc tttctcgcca cgttcgccgg ctttccccgt        2280

caagctctaa atcgggggct ccctttaggg ttccgattta gtgctttacg gcacctcgac        2340

cccaaaaaac ttgattaggg tgatggttca cgtagtgggc catcgccctg atagacggtt        2400

tttcgccctt tgacgttgga gtccacgttc tttaatagtg gactcttgtt ccaaactgga        2460

acaacactca accctatctc ggtctattct tttgatttat aagggatttt gccgatttcg        2520

gcctattggt taaaaaatga gctgatttaa caaaaattta acgcgaattt taacaaaata        2580

ttaacgttta caatttcagg tggcactttt cggggaaatg tgcgcggaac ccctatttgt        2640

ttattttttct aaatacattc aaatatgtat ccgctcatga gacaataacc ctgataaatg        2700

cttcaataat attgaaaaag gaagagtatg agtattcaac atttccgtgt cgcccttatt        2760

cccttttttg cggcattttg ccttcctgtt tttgctcacc cagaaacgct ggtgaaagta        2820

aaagatgctg aagatcagtt gggtgcacga gtgggttaca tcgaactgga tctcaacagc        2880

ggtaagatcc ttgagagttt tcgccccgaa gaacgttttc caatgatgag cacttttaaa        2940

gttctgctat gtggcgcggt attatcccgt attgacgccg ggcaagagca actcggtcgc        3000

cgcatacact attctcagaa tgacttggtt gagtactcac cagtcacaga aaagcatctt        3060

acggatggca tgacagtaag agaattatgc agtgctgcca taagcatgag tgataacact        3120

gcggccaact tacttctgac aacgatcgga ggaccgaagg agctaaccgc ttttttttcac        3180

aacatggggg atcatgtaac tcgccttgat cgttgggaac cggagctgaa tgaagccata        3240
```

Sequence Listing

```
gcaaacgacg agcgtgacac cacgatgcct gtagcaatgg caacaacgtt gcgcaaacta        3300

ttaactggcg aactacttac tctagcttcc cggcaacaat taatagactg gatggaggcg        3360

gataaagttg caggaccact tctgcgctcg gcccttccgg ctggctggtt tattgctgat        3420

aaatctggag ccggtgagcg tgggtctcgc ggtatcattg cagcactggg gccagatggt        3480

aagccctccc gtatcgtagt tatctacacg acgggcagtc aggcaactat ggatgaacga        3540

aatagacaga tcgctgagat aggtgcctca ctgattaagc attggtaact gtcagaccaa        3600

gtttactcat atatacttta gattgattta aaacttcatt tttaatttaa aaggatctag        3660

gtgaagatcc tttttgataa tctcatgacc aaaatccctt aacgtgagtt ttcgttccac        3720

tgagcgtcag accccgtaga aaagatcaaa ggatcttctt gagatccttt ttttctgcgc        3780

gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag cggtggtttg tttgccggat        3840

caagagctac caactctttt tccgaaggta actggcttca gcagagcgca gataccaaat        3900

actgtccttc tagtgtagcc gtagttaggc caccacttca agaactctgt agcaccgcct        3960

acatacctcg ctctgctaat cctgttacca gtggctgctg ccagtggcga taagtcgtgt        4020

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gggggttcgt gcacacagcc cagcttggag cgaacgacct acaccgaact gagataccta        4140

cagcgtgagc attgagaaag cgccacgctt cccgaaggga gaaaggcgga caggtatccg        4200

gtaagcggca gggtcggaac aggagagcgc acgaggagc ttccaggggg gaacgcctgg        4260

tatctttata gtcctgtcgg gtttcgccac ctctgacttg agcgtcgatt tttgtgatgc        4320

tcgtcagggg ggccgagcct atggaaaaac gccagcaacg cggccttttt acggttcctg        4380

gccttttgct ggccttttgc tcacatgttc tttcctgcgt tatcccctga ttctgtggat        4440
```

Sequence Listing

```
aaccgtatta ccgcctttga gtgagctgat accgctcgcc gcagccgaac gaccgagcgc    4500

agcgagtcag tgagcgagga agcggaagag cgcctgatgc ggtattttct ccttacgcat    4560

ctgtgcggta tttcacaccg catatatggt gcactctcag tacaatctgc tctgatgccg    4620

catagttaag ccagtataca ctccgctatc gctacgtgac tgcaaggaga tggcgcccaa    4680

cagtcccccg gccacggggc ctgccaccat acccacgccg aaacaagcgc tcatgagccc    4740

gaagtggcga gcccgatctt ccccatcggt gatgtcggcg atataggcgc cagcaaccgc  ·  4800

acctgtggcg ccggtgatgc cggccacgat gcgtccggcg tagaggatct tgagatctcg    4860

atccgcgaaa t                                                          4871
```

<210>   10
<211>   3703
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pMC75 plasmid full sequence

<400>   10
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taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac     60

tttaagaagg agatatacat atggatgtgc tgatgaccca gtctccattg agtttacctg    120

tcagtcttgg agatcaagcc tccatctctt gcagatctag tcagatcatt gtacatagta    180

atggaaacac ctatttagaa tggtacctgc agaaaccagg ccagtctcca aagctcctga    240

tctacaaagt ttccaaccga ttttctgggg tcccagacag gttcagtggc agtggatcag    300

ggacagattt cacactcaag atcagcagag tggaggctga ggatctggga gtttattact    360

gctttcaagg ttcacatgtt ccattcacgt tcggctcggg acaaagttg gaaataaaac     420
```

Sequence Listing

.

```
gggctgatgc tgcaccaact gtatccatct tcccaccatc cagtgagcag ttaacatctg        480

gaggtgcctc agtcgtgtgc ttcttgaaca acttctaccc caaagacatc aatgtcaagt        540

ggaagattga tggcagtgaa cgacaaaatg gcgtcctgaa cagttggact gatcaggaca        600

gcaaagacag cacctacagc atgagcagca ccctcacgtt gaccaaggac gagtatgaac        660

gacataacag ctatacctgt gaggccactc acaagacatc aacttcaccc attgtcaaga        720

gcttcaacag gaatgagtgt ggtaaagctt aatgaattcg ctgctaaca aagcccgaaa        780

ggaagctgag ttggctgctg ccaccgctga gcaataacta gcataacccc ttgggcctct        840

aaacgggtct tgaggggttt tttgctgaaa ggaggaacta tatccggatc ggagatcaat        900

tctggcgtaa tagcgaagag gcccgcaccg atcgcccttc ccaacagttg cgtagcctga        960

atggcgaatg ggacgcgccc tgtagcggcg cattaagcgc ggcgggtgtg gtggttacgc       1020

gcagcgtgac cgctacactt gccagcgccc tagcgcccgc tcctttcgct ttcttccctt       1080

cctttctcgc cacgttcgcc ggctttcccc gtcaagctct aaatcggggg ctccctttag       1140

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cacgtagtgg gccatcgccc tgatagacgg tttttcgccc tttgacgttg gagtccacgt       1260

tctttaatag tggactcttg ttccaaactg gaacaacact caaccctatc tcggtctatt       1320

cttttgattt ataagggatt ttgccgattt cggcctattg gttaaaaaat gagctgattt       1380

aacaaaaatt taacgcgaat tttaacaaaa tattaacgtt tacaatttca ggtggcactt       1440

ttcggggaaa tgtgcgcgga acccctattt gtttattttt ctaaatacat tcaaatatgt       1500

atccgctcat gagacaataa ccctgataaa tgcttcaata atattgaaaa aggaagagta       1560

tgagtattca acatttccgt gtcgccctta ttcccttttt tgcggcattt tgccttcctg       1620
```

Sequence Listing

```
tttttgctca cccagaaacg ctggtgaaag taaaagatgc tgaagatcag ttgggtgcac        1680

gagtgggtta catcgaactg gatctcaaca gcggtaagat ccttgagagt tttcgccccg        1740

aagaacgttt tccaatgatg agcactttta aagttctgct atgtggcgcg gtattatccc        1800

gtattgacgc cgggcaagag caactcggtc gccgcataca ctattctcag aatgacttgg        1860

ttgagtactc accagtcaca gaaaagcatc ttacggatgg catgacagta agagaattat        1920

gcagtgctgc cataagcatg agtgataaca ctgcggccaa cttacttctg acaacgatcg        1980

gaggaccgaa ggagctaacc gcttttttc acaacatggg ggatcatgta actcgccttg         2040

atcgttggga accggagctg aatgaagcca taccaaacga cgagcgtgac accacgatgc        2100

ctgtagcaat ggcaacaacg ttgcgcaaac tattaactgg cgaactactt actctagctt        2160

cccggcaaca attaatagac tggatggagg cggataaagt tgcaggacca cttctgcgct        2220

cggcccttcc ggctggctgg tttattgctg ataaatctgg agccggtgag cgtgggtctc        2280

gcggtatcat tgcagcactg gggccagatg gtaagccctc ccgtatcgta gttatctaca        2340

cgacgggcag tcaggcaact atggatgaac gaaatagaca gatcgctgag ataggtgcct        2400

cactgattaa gcattggtaa ctgtcagacc aagtttactc atatatactt tagattgatt        2460

taaaacttca tttttaattt aaaaggatct aggtgaagat ccttttttgat aatctcatga       2520

ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc agaccccgta gaaaagatca        2580

aaggatcttc ttgagatcct tttttctgc gcgtaatctg ctgcttgcaa acaaaaaaac        2640

caccgctacc agcggtggtt tgtttgccgg atcaagagct accaactctt tttccgaagg        2700

taactggctt cagcagagcg cagataccaa atactgtcct tctagtgtag ccgtagttag        2760

gccaccactt caagaactct gtagcaccgc ctacatacct cgctctgcta atcctgttac        2820
```

Sequence Listing

```
cagtggctgc tgccagtggc gataagtcgt gtcttaccgg gttggactca agacgatagt      2880

taccggataa ggcgcagcgg tcgggctgaa cggggggttc gtgcacacag cccagcttgg      2940

agcgaacgac ctacaccgaa ctgagatacc tacagcgtga gcattgagaa agcgccacgc      3000

ttcccgaagg gagaaaggcg gacaggtatc cggtaagcgg cagggtcgga acaggagagc      3060

gcacgaggga gcttccaggg gggaacgcct ggtatcttta tagtcctgtc gggtttcgcc      3120

acctctgact tgagcgtcga ttttgtgat gctcgtcagg ggggccgagc ctatggaaaa       3180

acgccagcaa cgcggccttt ttacggttcc tggccttttg ctggcctttt gctcacatgt      3240

tctttcctgc gttatcccct gattctgtgg ataaccgtat taccgccttt gagtgagctg      3300

ataccgctcg ccgcagccga acgaccgagc gcagcgagtc agtgagcgag gaagcggaag      3360

agcgcctgat gcggtatttt ctccttacgc atctgtgcgg tatttcacac cgcatatatg      3420

gtgcactctc agtacaatct gctctgatgc cgcatagtta agccagtata cactccgcta      3480

tcgctacgtg actgcaagga gatggcgccc aacagtcccc cggccacggg gcctgccacc      3540

atacccacgc cgaaacaagc gctcatgagc ccgaagtggc gagcccgatc ttccccatcg      3600

gtgatgtcgg cgatataggc gccagcaacc gcacctgtgg cgccggtgat gccggccacg      3660

atgcgtccgg cgtagaggat cttgagatct cgatccgcga aat                        3703
```

```
<210>   11
<211>   5576
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   pLSC52 plasmid full sequence
```

Sequence Listing

<400>   11

```
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac        60

tttaagaagg agatatacat atggatgtga agctggtgga atctggagga ggcttagtgc       120

agcctggagg gtccctgaaa ctctcctgtg caacctctgg attcactttc agtgactatt       180

acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta       240

atgatgatag ttccgccgct tattcagaca ctgtaaaggg ccggttcacc atctccagag       300

acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca       360

tatattcctg tgcaagagga ctggcctggg gagcctggtt tgcttactgg ggccaaggga       420

ctctggtcac tgtctctgca gccaaaacga cacccccatc tgtctatcca ctggcccctg       480

gatctgctgc ccaaactaac tccatggtga ccctgggatg cctggtcaag ggctatttcc       540

ctgagccagt gacagtgacc tggaactctg atccctgtc cagcggtgtg cacaccttcc        600

cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc ccctccagca       660

cctggcccag cgagaccgtc acctgcaacg ttgcccaccc ggccagcagc accaaggtgg       720

acaagaaaat tgtgcccagg gattgtggtg agcccaaatc ttgtgacaaa actcacacat       780

gcccaccgtg cccagcacct gaactcctgg gggaccgtca gtcttcctc ttccccccaa        840

aacccaagga caccctcatg atctcccgga cccctgaggt cacatgcgtg gtggtggacg       900

tgagccacga agaccctgag gtcaagttca actggtacgt ggacggcgtg gaggtgcata       960

atgccaagac aaagccgcgg gaggagcagt acaacagcac gtaccgtgtg gtcagcgtcc      1020

tcaccgtcct gcaccaggac tggctgaatg gcaaggagta caagtgcaag gtctccaaca      1080

aagccctccc agcccccatc gagaaaacca tctccaaagc caaagggcag ccccgagaac      1140
```

Sequence Listing

```
cacaggtgta caccctgccc ccatcccggg atgagctgac caagaaccag gtcagcctga            1200

cctgcctggt caaaggcttc tatcccagcg acatcgccgt ggagtgggag agcaatgggc            1260

agccggagaa caactacaag accacgcctc ccgtgctgga ctccgacggc tccttcttcc            1320

tctacagcaa gctcaccgtg gacaagagca ggtggcagca ggggaacgtc ttctcatgct            1380

ccgtgatgca tgaggctctg cacaaccact acacgcagaa gagcctctcc ctgtctccgg            1440

gtaaaggcgg aggcggatcc ggtggtggcg gttctaaagc ttccggaggt cccgagggcg            1500

gcagcctggc cgcgctgacc gcgcaccagg cttgccacct gccgctggag actttcaccc            1560

gtcatcgcca gccgcgcggc tgggaacaac tggagcagtg cggctatccg gtgcagcggc            1620

tggtcgccct ctacctggcg gcgcggctgt cgtggaacca ggtcgaccag gtgatccgca            1680

acgccctggc cagccccggc agcggcggcg acctgggcga agcgatccgc gagcagccgg            1740

agcaggcccg tctggccctg accctggccg ccgccgagag cgagcgcttc gtccggcagg            1800

gcaccggcaa cgacgaggcc ggcgcggcca acggcccggc ggacagcggc gacgccctgc            1860

tggagcgcaa ctatcccact ggcgcggagt tcctcggcga cggcggcgac gtcagcttca            1920

gcacccgcgg cacgcagaac tggacggtgg agcggctgct ccaggcgcac cgccaactgg            1980

aggagcgcgg ctatgtgttc gtcggctacc acggcacctt cctcgaagcg cgcaaagca             2040

tcgtcttcgg cggggtgcgc gcgcgcagcc aggacctcga cgcgatctgg cgcggtttct            2100

atatcgccgg cgatccggcg ctggcctacg gctacgccca ggaccaggaa cccgacgcac            2160

gcggccggat ccgcaacggt gccctgctgc gggtctatgt gccgcgctcg agcctgccgg            2220

gcttctaccg caccagcctg accctggccg cgccggaggc ggcgggcgag gtcgaacggc            2280

tgatcggcca tccgctgccg ctgcgcctgg acgccatcac cggccccgag gaggaaggcg            2340
```

Sequence Listing

```
ggcgcctgga gaccattctc ggctggccgc tggccgagcg caccgtggtg attccctcgg        2400

cgatccccac cgacccgcgc aacgtcggcg gcgacctcga cccgtccagc atccccgaca        2460

aggaacaggc gatcagcgcc ctgccggact acgccagcca gcccggcaaa ccgccgcgcg        2520

aggacctgaa gtaactgccg cgaccggccg gctcccttcg caggagccgg ccttctcggg        2580

gcctggccat acatcaggtt ttcctgatgc cagcccaatc gaatatgaat tcggctgcta        2640

acaaagcccg aaaggaagct gagttggctg ctgccaccgc tgagcaataa ctagcataac        2700

cccttgggcc tctaaacggg tcttgagggg ttttttgctg aaaggaggaa ctatatccgg        2760

atcggagatc aattctggcg taatagcgaa gaggcccgca ccgatcgccc ttcccaacag        2820

ttgcgtagcc tgaatggcga atgggacgcg ccctgtagcg gcgcattaag cgcggcgggt        2880

gtggtggtta cgcgcagcgt gaccgctaca cttgccagcg ccctagcgcc cgctcctttc        2940

gctttcttcc cttcctttct cgccacgttc gccggctttc cccgtcaagc tctaaatcgg        3000

gggctccctt tagggttccg atttagtgct ttacggcacc tcgaccccaa aaaacttgat        3060

tagggtgatg gttcacgtag tgggccatcg ccctgataga cggtttttcg ccctttgacg        3120

ttggagtcca cgttctttaa tagtggactc ttgttccaaa ctggaacaac actcaaccct        3180

atctcggtct attcttttga tttataaggg attttgccga tttcggccta ttggttaaaa        3240

aatgagctga tttaacaaaa atttaacgcg aattttaaca aaatattaac gtttacaatt        3300

tcaggtggca cttttcgggg aaatgtgcgc ggaacccta tttgtttatt tttctaaata        3360

cattcaaata tgtatccgct catgagacaa taaccctgat aaatgcttca ataatattga        3420

aaaaggaaga gtatgagtat tcaacatttc cgtgtcgccc ttattccctt ttttgcggca        3480

ttttgccttc ctgtttttgc tcacccagaa acgctggtga aagtaaaaga tgctgaagat        3540
```

Sequence Listing

```
cagttgggtg cacgagtggg ttacatcgaa ctggatctca acagcggtaa gatccttgag        3600

agttttcgcc ccgaagaacg ttttccaatg atgagcactt ttaaagttct gctatgtggc        3660

gcggtattat cccgtattga cgccgggcaa gagcaactcg gtcgccgcat acactattct        3720

cagaatgact tggttgagta ctcaccagtc acagaaaagc atcttacgga tggcatgaca        3780

gtaagagaat tatgcagtgc tgccataagc atgagtgata acactgcggc caacttactt        3840

ctgacaacga tcggaggacc gaaggagcta accgcttttt ttcacaacat gggggatcat        3900

gtaactcgcc ttgatcgttg ggaaccggag ctgaatgaag ccataccaaa cgacgagcgt        3960

gacaccacga tgcctgtagc aatggcaaca cgttgcgca aactattaac tggcgaacta        4020

cttactctag cttcccggca acaattaata gactggatgg aggcggataa agttgcagga        4080

ccacttctgc gctcggccct tccggctggc tggtttattg ctgataaatc tggagccggt        4140

gagcgtgggt ctcgcggtat cattgcagca ctggggccag atggtaagcc ctcccgtatc        4200

gtagttatct acacgacggg cagtcaggca actatggatg aacgaaatag acagatcgct        4260

gagataggtg cctcactgat taagcattgg taactgtcag accaagttta ctcatatata        4320

ctttagattg atttaaaact tcatttttaa tttaaaagga tctaggtgaa gatccttttt        4380

gataatctca tgaccaaaat cccttaacgt gagttttcgt tccactgagc gtcagacccc        4440

gtagaaaaga tcaaaggatc ttcttgagat cctttttttc tgcgcgtaat ctgctgcttg        4500

caaacaaaaa aaccaccgct accagcggtg gtttgtttgc cggatcaaga gctaccaact        4560

ctttttccga aggtaactgg cttcagcaga gcgcagatac caaatactgt ccttctagtg        4620

tagccgtagt taggccacca cttcaagaac tctgtagcac cgcctacata cctcgctctg        4680

ctaatcctgt taccagtggc tgctgccagt ggcgataagt cgtgtcttac cgggttggac        4740
```

Sequence Listing

```
tcaagacgat agttaccgga taaggcgcag cggtcgggct gaacggggggg ttcgtgcaca        4800

cagcccagct tggagcgaac gacctacacc gaactgagat acctacagcg tgagcattga        4860

gaaagcgcca cgcttcccga agggagaaag gcggacaggt atccggtaag cggcagggtc        4920

ggaacaggag agcgcacgag ggagcttcca ggggggaacg cctggtatct ttatagtcct        4980

gtcgggtttc gccacctctg acttgagcgt cgattttttgt gatgctcgtc aggggggccg        5040

agcctatgga aaaacgccag caacgcggcc tttttacggt tcctggcctt ttgctggcct        5100

tttgctcaca tgttctttcc tgcgttatcc cctgattctg tggataaccg tattaccgcc        5160

tttgagtgag ctgataccgc tcgccgcagc cgaacgaccg agcgcagcga gtcagtgagc        5220

gaggaagcgg aagagcgcct gatgcggtat tttctcctta cgcatctgtg cggtatttca        5280

caccgcatat atggtgcact ctcagtacaa tctgctctga tgccgcatag ttaagccagt        5340

atacactccg ctatcgctac gtgactgcaa ggagatggcg cccaacagtc ccccggccac        5400

ggggcctgcc accatacca cgccgaaaca agcgctcatg agcccgaagt ggcgagcccg        5460

atcttcccca tcggtgatgt cggcgatata ggcgccagca accgcacctg tggcgccggt        5520

gatgccggcc acgatgcgtc cggcgtagag gatcttgaga tctcgatccg cgaaat          5576
```

```
<210>    12
<211>    4263
<212>    DNA
<213>    Artificial Sequence

<220>
<223>    pKL4 plasmid full sequence


<400>    12
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac        60
```

Sequence Listing

tttaagaagg agatatacat atgcatcacc atcaccatca cgatgtgaag ctggtggaat   120

ctggaggagg cttagtgcag cctggagggt ccctgaaact ctcctgtgca acctctggat   180

tcactttcag tgactattac atgtattggg ttcgccagac tccagagaag aggctggagt   240

gggtcgcata cattagtaat gatgatagtt ccgccgctta ttcagacact gtaaagggcc   300

ggttcaccat ctccagagac aatgccagga caccctcta cctgcaaatg agccgtctga   360

agtctgagga cacagccata tattcctgtg caagaggact ggcctgggga gcctggtttg   420

cttactgggg ccaagggact ctggtcactg tctctgcagc caaaacgaca cccccatctg   480

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gcggtgtgca caccttccca gctgtcctgc agtctgacct ctacactctg agcagctcag   660

tgactgtccc ctccagcacc tggcccagcg agaccgtcac ctgcaacgtt gcccacccgg   720

ccagcagcac caaggtggac aagaaaattg tgcccaggga ttgtggtgct aagccttgca   780

tagctacaca agcttccggt ggtggcggat ctggaggtgg cggaagcgga ggtcccgagg   840

tgacaggggg aatggcaagc aagtgggatc agaagggtat ggacattgcc tatgaggagg   900

cggccttagg ttacaaagag ggtggtgttc ctattggcgg atgtcttatc aataacaaag   960

acggaagtgt tctcggtcgt ggtcacaaca tgagatttca aaagggatcc gccacactac   1020

atggtgagat ctccactttg gaaactgtg ggagattaga gggcaaagtg tacaaagata   1080

ccactttgta tacgacgctg tctccatgcg acatgtgtac aggtgccatc atcatgtatg   1140

gtattccacg ctgtgttgtc ggtgagaacg ttaatttcaa aagtaagggc gagaaatatt   1200

tacaaactag aggtcacgag gttgttgttg ttgacgatga gaggtgtaaa aagatcatga   1260

Sequence Listing

```
aacaatttat cgatgaaaga cctcaggatt ggtttgaaga tattggtgag taggaattcg    1320

gctgctaaca aagcccgaaa ggaagctgag ttggctgctg ccaccgctga gcaataacta    1380

gcataacccc ttgggcctct aaacgggtct tgaggggttt tttgctgaaa ggaggaacta    1440

tatccggatc ggagatcaat tctggcgtaa tagcgaagag gcccgcaccg atcgcccttc    1500

ccaacagttg cgtagcctga atggcgaatg ggacgcgccc tgtagcggcg cattaagcgc    1560

ggcgggtgtg gtggttacgc gcagcgtgac cgctacactt gccagcgccc tagcgcccgc    1620

tcctttcgct ttcttccctt cctttctcgc cacgttcgcc ggctttcccc gtcaagctct    1680

aaatcggggg ctccctttag ggttccgatt tagtgcttta cggcacctcg accccaaaaa    1740

acttgattag ggtgatggtt cacgtagtgg gccatcgccc tgatagacgg tttttcgccc    1800

tttgacgttg gagtccacgt tctttaatag tggactcttg ttccaaactg gaacaacact    1860

caaccctatc tcggtctatt cttttgattt ataagggatt ttgccgattt cggcctattg    1920

gttaaaaaat gagctgattt aacaaaaatt taacgcgaat tttaacaaaa tattaacgtt    1980

tacaatttca ggtggcactt ttcggggaaa tgtgcgcgga acccctattt gtttattttt    2040

ctaaatacat tcaaatatgt atccgctcat gagacaataa ccctgataaa tgcttcaata    2100

atattgaaaa aggaagagta tgagtattca acatttccgt gtcgccctta ttcctttttt    2160

tgcggcattt tgccttcctg tttttgctca cccagaaacg ctggtgaaag taaaagatgc    2220

tgaagatcag ttgggtgcac gagtgggtta catcgaactg gatctcaaca gcggtaagat    2280

ccttgagagt tttcgccccg aagaacgttt tccaatgatg agcacttta aagttctgct    2340

atgtggcgcg gtattatccc gtattgacgc cgggcaagag caactcggtc gccgcataca    2400

ctattctcag aatgacttgg ttgagtactc accagtcaca gaaaagcatc ttacggatgg    2460
```

Sequence Listing

```
catgacagta agagaattat gcagtgctgc cataagcatg agtgataaca ctgcggccaa        2520

cttacttctg acaacgatcg gaggaccgaa ggagctaacc gctttttttc acaacatggg        2580

ggatcatgta actcgccttg atcgttggga accggagctg aatgaagcca taccaaacga        2640

cgagcgtgac accacgatgc ctgtagcaat ggcaacaacg ttgcgcaaac tattaactgg        2700

cgaactactt actctagctt cccggcaaca attaatagac tggatggagg cggataaagt        2760

tgcaggacca cttctgcgct cggcccttcc ggctggctgg tttattgctg ataaatctgg        2820

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ccgtatcgta gttatctaca cgacgggcag tcaggcaact atggatgaac gaaatagaca        2940

gatcgctgag ataggtgcct cactgattaa gcattggtaa ctgtcagacc aagtttactc        3000

atatatactt tagattgatt taaaacttca tttttaattt aaaaggatct aggtgaagat        3060

cctttttgat aatctcatga ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc        3120

agaccccgta gaaaagatca aaggatcttc ttgagatcct tttttctgc gcgtaatctg        3180

ctgcttgcaa acaaaaaaac caccgctacc agcggtggtt tgtttgccgg atcaagagct        3240

accaactctt tttccgaagg taactggctt cagcagagcg cagataccaa atactgtcct        3300

tctagtgtag ccgtagttag gccaccactt caagaactct gtagcaccgc ctacatacct        3360

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gttggactca agacgatagt taccggataa ggcgcagcgg tcgggctgaa cggggggttc        3480

gtgcacacag cccagcttgg agcgaacgac ctacaccgaa ctgagatacc tacagcgtga        3540

gcattgagaa agcgccacgc ttcccgaagg gagaaaggcg acaggtatc cggtaagcgg        3600

cagggtcgga acaggagagc gcacgaggga gcttccaggg gggaacgcct ggtatctttta       3660
```

Sequence Listing

```
tagtcctgtc gggtttcgcc acctctgact tgagcgtcga ttttttgtgat gctcgtcagg       3720

ggggccgagc ctatggaaaa acgccagcaa cgcggccttt ttacggttcc tggccttttg        3780

ctggcctttt gctcacatgt tctttcctgc gttatcccct gattctgtgg ataaccgtat        3840

taccgccttt gagtgagctg ataccgctcg ccgcagccga acgaccgagc gcagcgagtc        3900

agtgagcgag gaagcggaag agcgcctgat gcggtatttt ctccttacgc atctgtgcgg        3960

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.aat                                                                      4263
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